**Chest X-Ray Lesion Detection with YOLOv5**

**Overview**

This project aims to improve patient outcomes and ease healthcare professionals’ workflows with a deep learning model - YOLOv5. The model is trained to identify suspicious findings in Chest X-Rays (CXR) on a hospital scale. The ultimate goal is to flag patients who may require priority attention and forward them to more detailed diagnostic exams.

The model was trained on the NIH Chest X-Ray dataset available here:

<https://www.kaggle.com/datasets/nih-chest-xrays/data/data>

**Get Started**

If you want to deep dive with this, you can start with install and import dependencies (I did it on Anaconda prompt)

- used Python 3.10 on the project environment);

- Pytorch (CPU version for my AMD laptop) and install the code provided;

- YOLOv5 repository: https://github.com /ultralytics/yolov5

Download zip and >pip install -r requirements.txt

- Import torch

**Define your yaml file:**

path: data #dataset root dir

train: yolov5-master\data\images # train images (relative to ‘path’)

val: yolov5-master\data\images # val images(relative to ‘path’)

test: #test images (optional)

# classes

nc: 1 # just used one to define “suspicious lesion”

names/label: [“Finding”]

**Training the model**

!python train.py --img 640 --batch 16 --epochs 150 --data dataset.yml --weights yolov5s.pt

**Load the model and Inference**

model = torch.hub.load('ultralytics/yolov5', 'custom', path = path/to/ dataset', force\_reload = True)

img=os.path.join(‘path/to/dataset’,'img','01.png')

results = model(img)

results.print()

**Results visualization**

%matplotlib inline

plt.imshow(np.squeeze(results.render()))

plt.show()